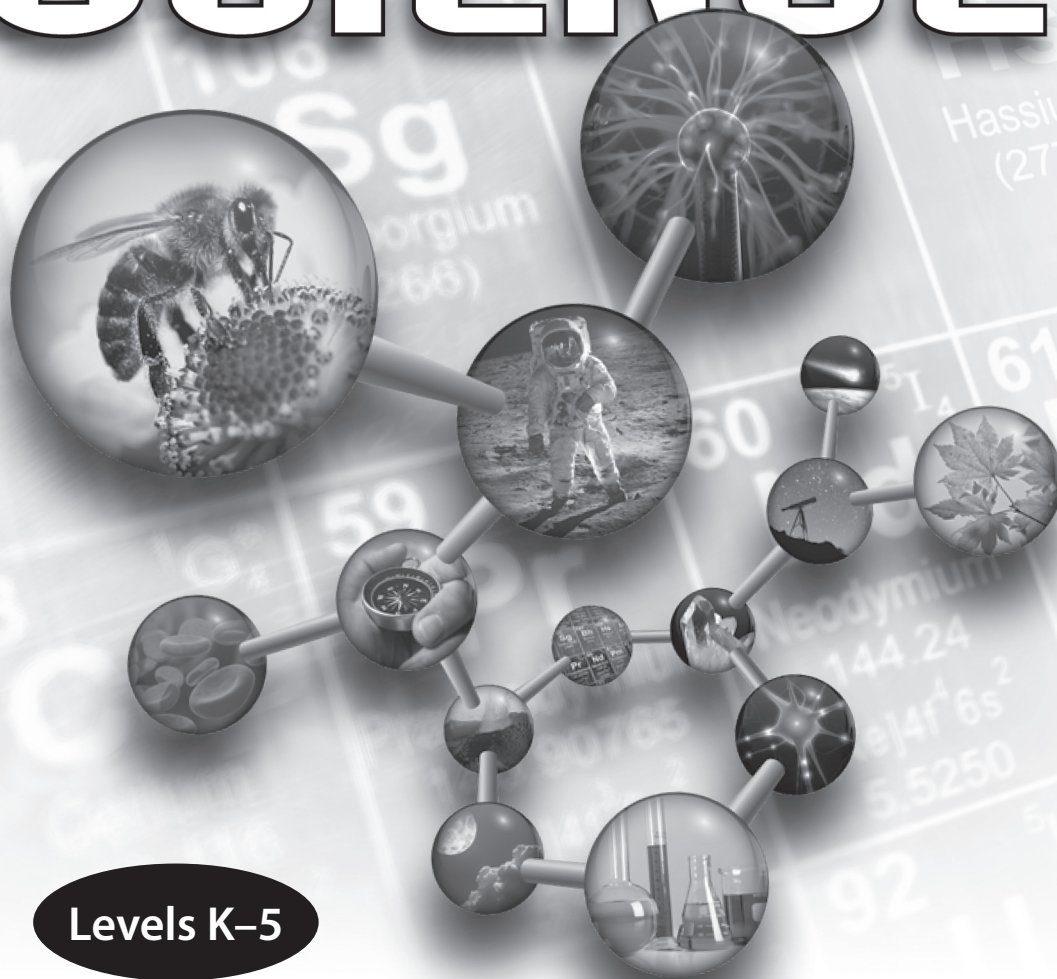


Strategies for Teaching
SCIENCE



Levels K-5

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 **SHELL EDUCATION**

Table of Contents

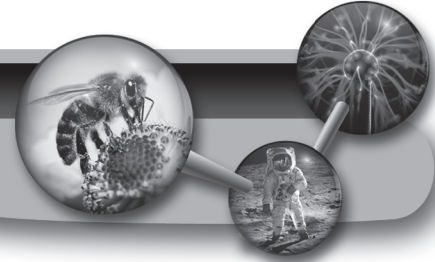
| | | | |
|--|-----|---|-----|
| Introduction: What Is Important in Science Education? | 5 | Teaching at Museums and Science Centers | 131 |
| Vocabulary Development..... | 6 | Museum Exploration..... | 141 |
| Differentiation..... | 8 | Exploring the Museum..... | 147 |
| Inquiry and Exploration | 9 | Science Competitions: Bringing Ideas to Life | 153 |
| Critical Thinking and Questioning | 10 | To Catch a Leprechaun | 165 |
| Real-World Applications..... | 11 | Use It Another Way..... | 169 |
| Integrating the Content Areas and Technology | 13 | Integrating the Content Areas and Technology | |
| How to Use This Resource | 17 | Writing and Journaling about Science | 173 |
| Correlations to Standards | 21 | Jack and the Beanstalk..... | 181 |
| Inquiry and Exploration | | The Life Cycle of a Butterfly..... | 189 |
| The Scientific Method | 25 | Reading in Science | 197 |
| Introduction to Magnetism | 29 | Animals and Fish and People, Oh My!..... | 215 |
| Electricity and Magnetism | 34 | About Dogs | 219 |
| Scientific Inquiry Skills | 41 | Integrating the Arts | 229 |
| Mirror, Mirror | 51 | Healthy Teeth Are Happy Teeth | 233 |
| Reflection, Refraction, Absorption of Light..... | 57 | Clean Hands, Healthy Body..... | 241 |
| Critical Thinking and Questioning | | The Mathematics and Science Connection | 247 |
| Teaching Critical Thinking Skills | 65 | How Many Servings? | 263 |
| Where to Live | 71 | Energy from Food | 271 |
| Extinction..... | 76 | Technology and the Science Classroom | 279 |
| Teaching with Discrepant Events | 85 | The Ugly Duckling | 295 |
| Sand, Dirt, and Magic! | 91 | Let's Visit the Virtual Zoo | 301 |
| Properties of Water..... | 97 | | |
| Real-World Applications | | | |
| Outdoor Experiences | 101 | | |
| Weather and Clouds..... | 111 | | |
| Where Can You Find Polluted Air?..... | 121 | | |

Table of Contents *(cont.)*

| | |
|--|-----|
| Assessment | 305 |
| Formative Assessment | 305 |
| Summative Assessment | 306 |
| Using Backwards Curriculum Design to Create Assessments | 307 |
| How Do I Know Which Form of Assessment to Use? | 307 |
| Examples of Formative Assessments | 308 |
| Examples of Summative Assessments | 314 |
| Final Thoughts on Assessment | 334 |
| Appendices | 335 |
| Appendix A: Answer Key | 335 |
| Appendix B: Activities to Demonstrate Discrepant Events | 339 |
| Appendix C: Teacher Resources | 343 |
| Websites for Science Investigations | 343 |
| Science and Technology Competitions for Grades K–5 | 345 |
| Sample Simulations | 346 |
| Appendix D: Glossary of Terms | 347 |
| Vocabulary for K–2 Activities | 347 |
| Vocabulary for 3–5 Activities | 348 |
| Appendix E: References | 351 |
| Appendix F: Contents of the Teacher Resource CD | 369 |

Where to Live

Grades K–2 Lesson



Standard

Students know that plants and animals need certain resources for energy and growth (e.g., food, water, light, air).

Vocabulary

- common
- need

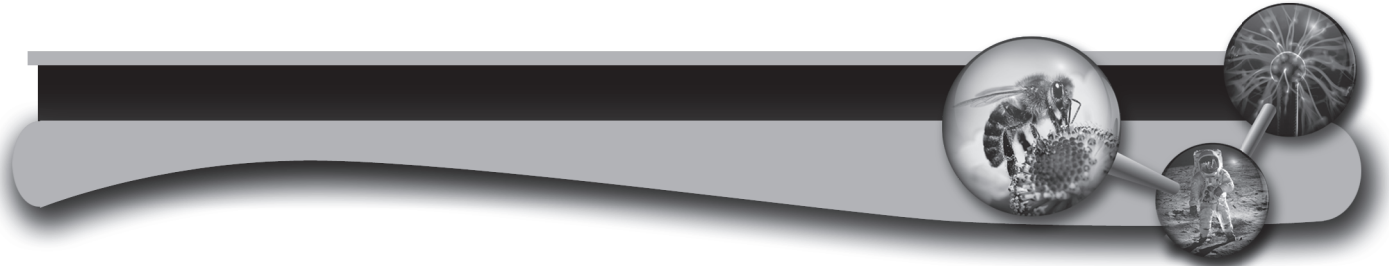
Materials

- *Farm Cat, City Cat* activity sheets (pp. 73–75)
- chart paper and marker
- one brown paper bag for each student, plus extras
- crayons or markers
- scissors
- tape or glue sticks
- pipe cleaners and plastic googly eyes (*optional*)

Procedure

1. Ask if anyone in class has a pet. Encourage students to describe their pets and what they do with them. Discuss what pets need in order to stay alive.
2. Ask students to name the things that all animals need. Label a sheet of chart paper, *What Animals Need*. Make a list of students' ideas and ask them to explain their reasons (e.g., Do all animals need sunlight to live? *No, deep sea marine animals, bats, and moles do not need direct sunlight to live.*)
3. Distribute copies of the *Farm Cat, City Cat* activity sheets to students. Introduce the concept that the same animals in different environments can act differently and have different *needs*. (For example, lions in a zoo live differently than lions in the wild.)

Where to Live *(cont.)*



Procedure *(cont.)*

4. Have students write or draw in the chart on their activity sheets (question 1) what is *common* to all cats, and what might be specific to indoor cats and to farm cats. Discuss their answers.
5. Draw a Venn diagram on chart paper. Label one circle *Indoor Cats* and the other circle *Farm Cats*. Ask several students to name some of the characteristics that are unique to each type of cat, using the charts on their activity sheets. Write their suggestions in the circles and write the *common* characteristics in the center where the circles overlap. Have students also fill in the Venn diagrams on their activity sheets (question 2).
6. Ask students which type of cat leads a happier life. Show students that there are many good reasons why each kind of life would make a cat happy.
7. On their activity sheets (question 3), ask students to draw where they think is the best place for a cat to live.
8. Have students work with partners. Distribute materials to make paper bag cat puppets to each student (brown bags, crayons or markers, scissors, tape or glue sticks, pipe cleaners, plastic eyes). Have students use the pattern on their activity sheets (p. 77) to make cat puppets, and to give the puppet a characteristic that distinguishes it as either a farm cat or an indoor cat.
9. Tell students to use their puppets to role-play a conversation about why each type of cat likes where it lives, and some reason why it might be unhappy, too.

Differentiation

Above-Level Learners

Locate an appropriate version of Aesop's fable *The Country Mouse and the City Mouse* which tells how each mouse feels when comparing his life to the other mouse. Have students read or listen to the story.

Below-Level Learners

Bring in pictures of farms and city apartment buildings to help students visualize the places where different cats live. Give more details about life in a city compared to life in the country. Display photos of different cats.

English Language Learners

Have students find pictures in magazines or on the Internet of different things cats need from their environment. Have students use the pictures as part of their Venn diagrams.

Name _____

Farm Cat, City Cat

DIRECTIONS

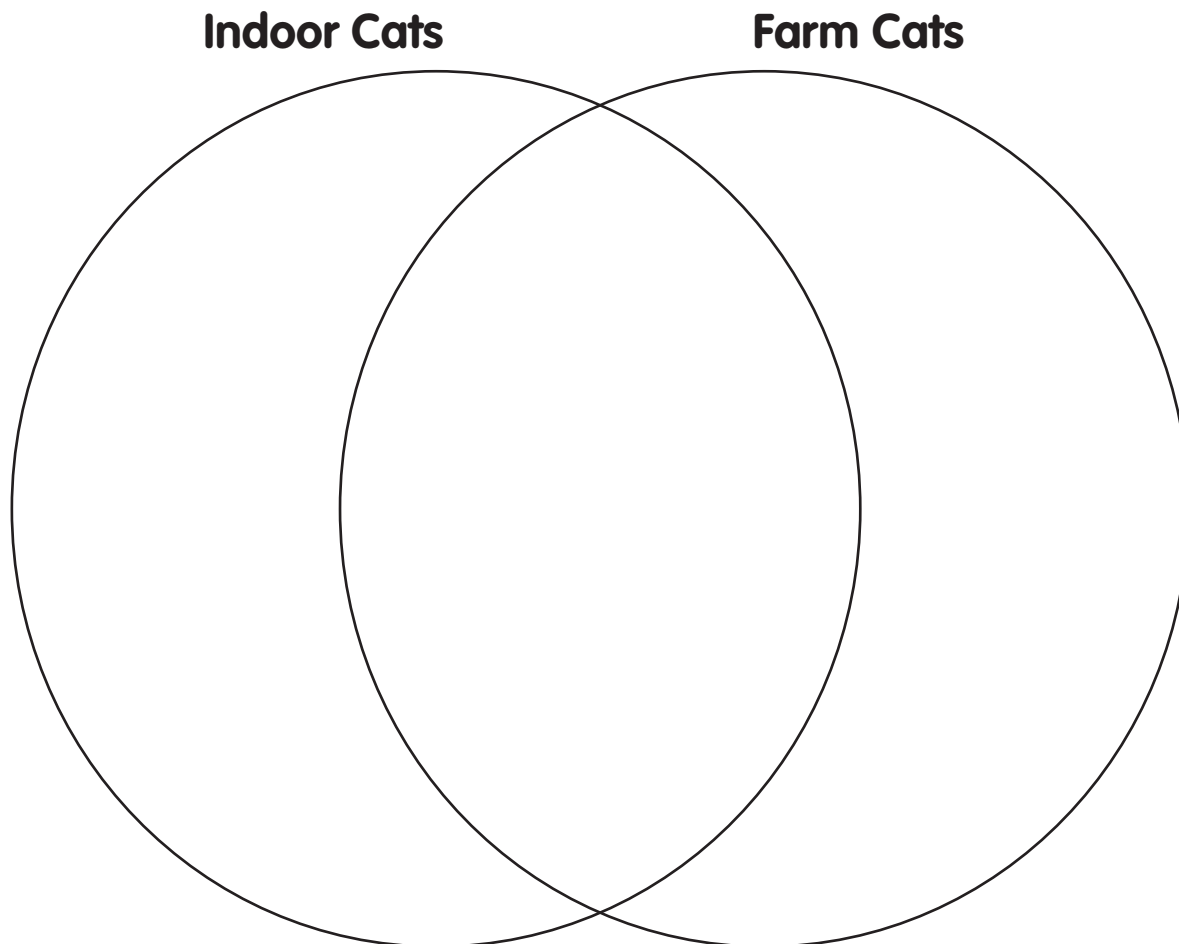
Complete the chart below.

1. In the first column, show what all cats have in common. In the second column, show what indoor cats have in common. In the third column, show what farm cats have in common.

| All Cats... | Most Indoor Cats... | Most Farm Cats... |
|-------------|---------------------|-------------------|
| | | |

Farm Cat, City Cat *(cont.)*

2. Write or draw something special about each type of cat. In the center, write or draw what the two types of cats have in common.

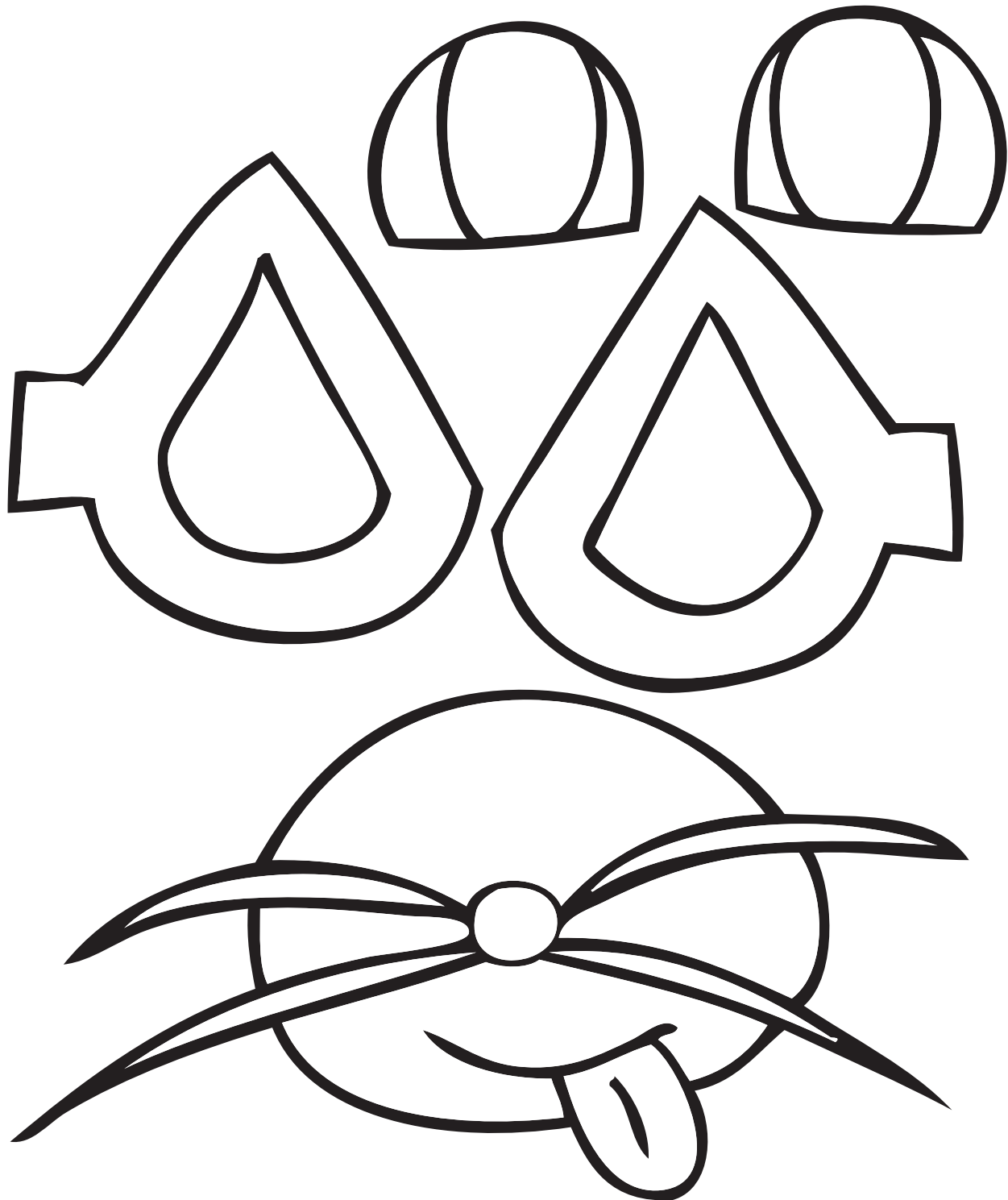


3. Draw where you think is the best place for a cat to live.

A large, empty rectangular box with a thin black border, intended for students to draw their preferred living environment for a cat.

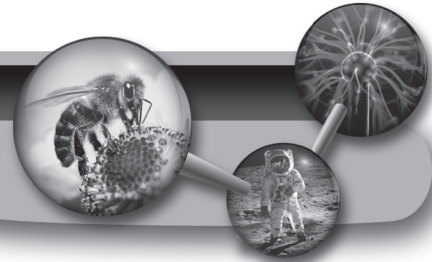
Farm Cat, City Cat *(cont.)*

4. Color and cut out the pattern below. Use a paper bag and glue to make a cat puppet. Color or decorate your puppet to show if it is an indoor cat or a farm cat.



Extinction

Grades 3–5 Lesson



Standard

Students know that all organisms (including humans) cause changes in their environments, and these changes can be beneficial or detrimental.

Materials

- *Polar Bears, Dodo Birds, and Woolly Mammoths* activity sheets (pp. 79–84)
- world map
- magazine photos or downloaded pictures of woolly mammoths, dodo birds, and polar bears
- poster paper
- markers or crayons

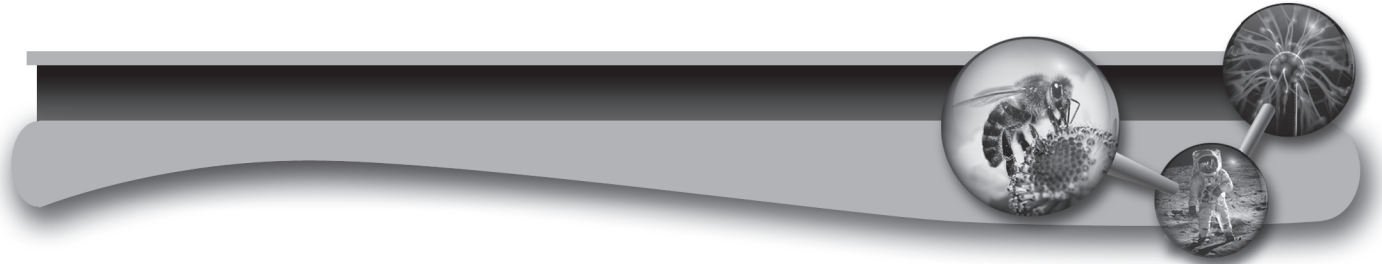
Vocabulary

- climate change
- extinction
- habitat

Procedure

1. Show a photo of a polar bear. Ask students where polar bears live. Use a world map to point out the Arctic ice cap and tell students that polar bears only live in the northern arctic areas. Label a sheet of chart paper *Polar Bears*, and have students help make a list of polar bear characteristics. Distribute copies of the *Polar Bears, Dodo Birds, and Woolly Mammoths* activity sheets and have students write these characteristics under question 1.
2. Explain how polar bears hunt by waiting on the ice for seals to come up from the water. Ask what might happen if all the ice melted in the summer. List the reasonable answers on the board, and have students write their ideas on their activity sheets (question 2).
3. Explain that when an animal's *habitat*, or living area, changes very quickly due to external forces or due to *climate change*, some animals die because they cannot find enough food to eat or their bodies are not made to live in the new physical conditions. For example, a polar bear could not live in extreme heat. When there are no animals of a specific kind left in the world, this is called *extinction*. Ask students to write the definitions of the vocabulary words on their activity sheets.

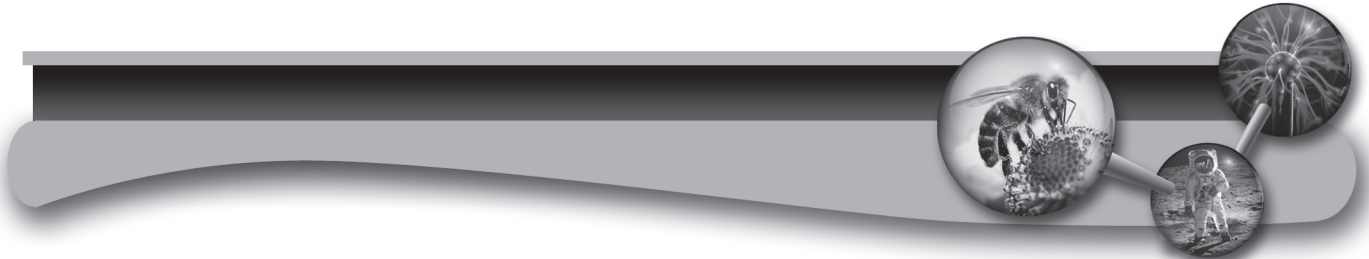
Extinction *(cont.)*



Procedure *(cont.)*

4. Talk briefly about habitats that might be changing and the impact those changes may have on animals. For example, many people are worried that polar bears may go extinct if there is no more ice for them to stand on to hunt seals.
5. Tell students to read the paragraph about the dodo bird on their activity sheets. Then, have students answer question 4. Have some students share their answers.
6. Tell students that we know humans lived at the same time as woolly mammoths because we have found cave paintings showing hunters trying to kill mammoths. Direct students to read the paragraph describing woolly mammoths on their activity sheets, and have them answer question 5. Have some students share their answers.
7. Have students fill in the chart on their activity sheets (question 6) to help them compare the conditions that led to the extinction of the dodo, the extinction of the mammoth, and the possible extinction of the polar bear.
8. Using their charts as a reference, ask students to fill in the triple Venn diagram (question 7) to show the common conditions for each animal that led its extinction (or possible extinction). Have students answer questions 8–10 on their activity sheets. Ask some students to share their answers.
9. Have students create posters about endangered species (question 11). Ask students to share their work when they are finished. Display the posters in a prominent part of the classroom.

Extinction *(cont.)*



Differentiation

Above-Level Learners

Have students visit the World Wildlife Fund website at <http://www.worldwildlife.org> and read more about other endangered and extinct animals. Ask students to share what they have learned with the rest of the class.

Below-Level Learners

Help guide students through the research process. Model for students how to use resources from the library to get information about endangered species. Show students how to take notes on index cards and then use those notes to write information on their posters.

English Language Learners

Have students work in small groups to complete a group poster. Bring in appropriately leveled reading materials for students to use for researching their animals.

Name _____

Polar Bears, Dodo Birds, and Woolly Mammoths

DIRECTIONS

Answer the following questions.

1. In the chart below, list some characteristics of polar bears.

| Polar Bears |
|-------------|
| |

2. What might happen to the polar bears if all the ice melted in the summer?

Polar Bears, Dodo Birds, and Woolly Mammoths *(cont.)*

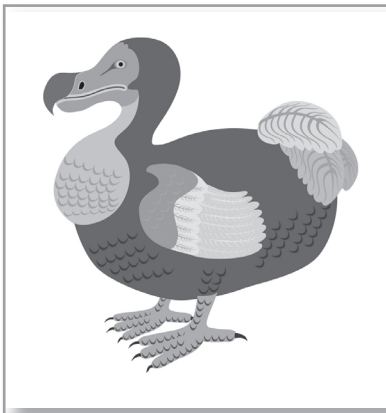
3. Write definitions for the following terms.

climate change: _____

extinction: _____

habitat: _____

Read the following paragraph about the dodo bird and then answer the question below.

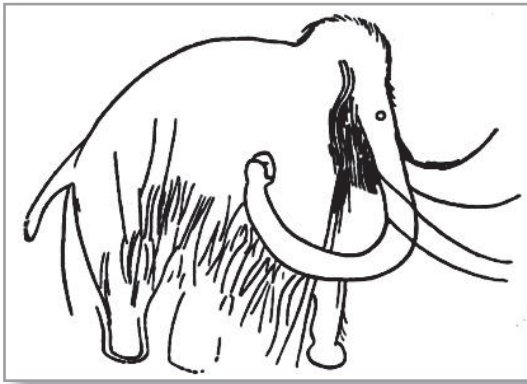


The Dodo Bird

The dodo was a kind of bird first sighted around 1600 on Mauritius, an island in the Indian Ocean. Less than 80 years after it was discovered, the dodo was extinct. The Dutch sailors who discovered them ate the birds and also destroyed the forest home of the dodos. The Dutch ships carried cats, rats, and pigs. These animals wrecked the dodos' nests and eggs. These flightless birds were doomed.

4. What do you think was the main cause of the dodo's extinction?

Polar Bears, Dodo Birds, and Woolly Mammoths *(cont.)*



The Woolly Mammoth

Woolly mammoths lived in cold climates, very much like the polar bears do today. But mammoths did not hunt and eat seals; they were plant eaters. They did not live on the ice. Yet their shaggy fur and the places where their skeletons have been found tell us that they lived in very cold places. The most current idea about why the woolly mammoth became extinct is that both the climate changed and humans hunted too many of them.

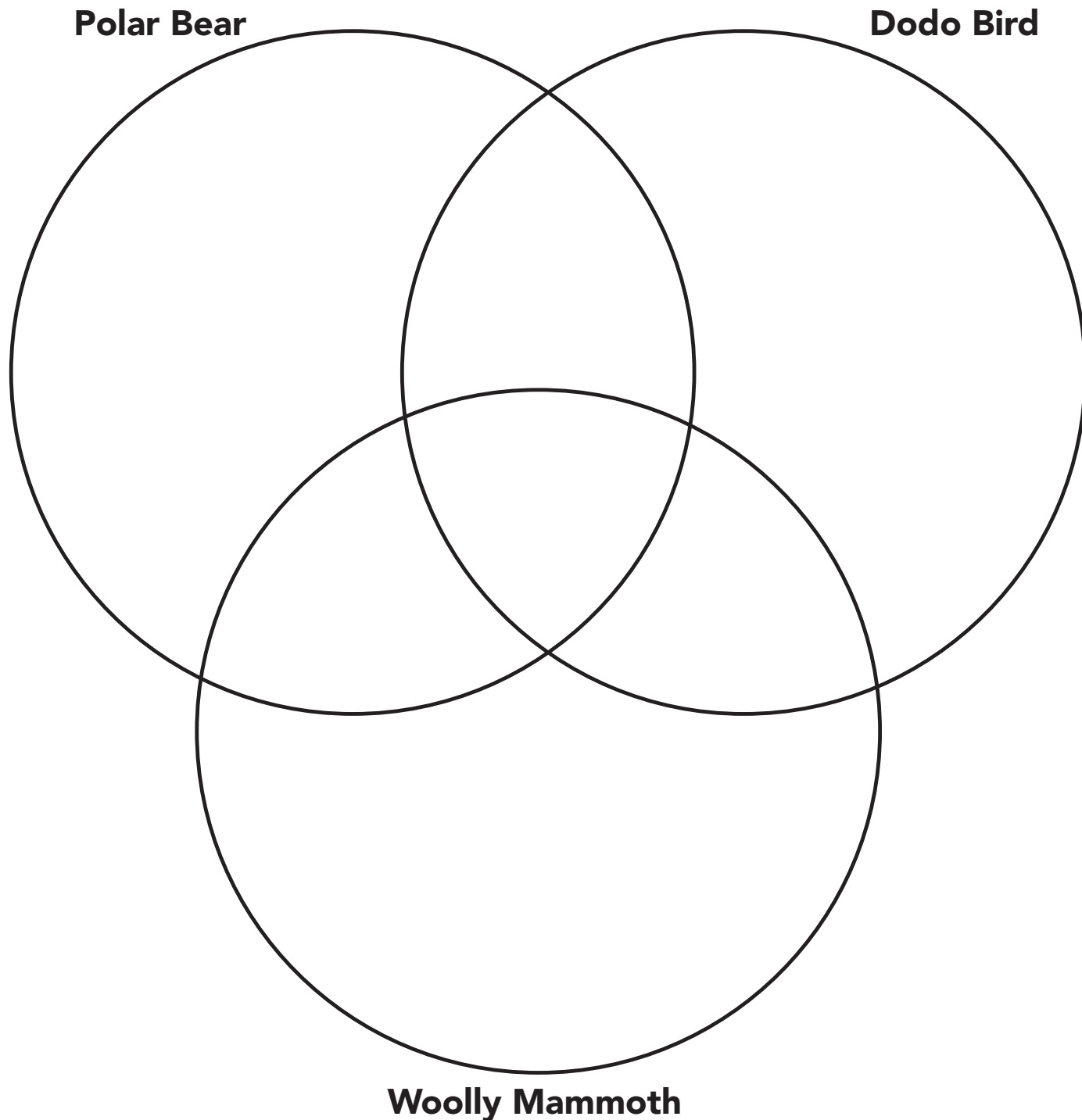
5. What do you think was the main cause of the woolly mammoth's extinction? _____
- _____
- _____
- _____

6. Using the information you know about polar bears, the dodo bird, and the woolly mammoth, complete the chart below by placing an X in the column if that characteristic applies.

| Animal | Change in Climate | Humans Hunted It | Humans Changed the Environment | Other |
|----------------|-------------------|------------------|--------------------------------|-------|
| Polar Bear | | | | |
| Dodo Bird | | | | |
| Woolly Mammoth | | | | |

Polar Bears, Dodo Birds, and Woolly Mammoths *(cont.)*

7. Fill in the Venn diagram below to show the common characteristics of each animal's extinction or possible extinction.



Polar Bears, Dodo Birds, and Woolly Mammoths *(cont.)*

8. What are some changes that humans make to an animal's habitat?

9. What are some of the ways humans can affect the whole Earth?

10. How can humans help prevent animals from becoming extinct?

Polar Bears, Dodo Birds, and Woolly Mammoths *(cont.)*

- 11.** Create a poster about an endangered species. Include the following:
- general description of the animal
 - description of the type of environment the animal needs to survive
 - the impact humans have had on the animal
 - what is being done to help the animal survive
 - map showing distribution of the animals worldwide
 - illustrations
 - possible solution to prevent extinction